

WHAT IS CLAIMED IS:

1. A scanning optical system comprising:
light source means for emitting a light flux;
deflection means for deflecting the light flux
5 emitted from the light source means; and
scanning optical means for guiding the light
flux deflected by the deflection means onto a surface
to be scanned and scanning the surface, the scanning
optical means including a fine structural grating on
10 at least one optical surface thereof,
wherein the fine structural grating has a
triangular grating in which a plurality of triangular
grating parts are arranged in one dimensional
direction, and
15 wherein when a grating height of a triangular
structure of the triangular grating is given by h , a
grating pitch thereof is given by P , and a wavelength
of the light flux emitted from the light source means
is given by λ , conditions of
20 $0.23\lambda \leq h$ and
 $0.52 < h/P$
are satisfied.

2. A scanning optical system according to claim
25 1, wherein a light flux incident into the fine
structural grating is substantially P polarized light.

3. A scanning optical system according to claim 1, wherein when a light flux incident into the fine structural grating is substantially S polarized light, conditions of

5 $0.35\lambda \leq h$ and

$0.80 < h/P$

are satisfied.

4. A scanning optical system comprising:

10 a light source means for emitting a plurality of light fluxes;

 deflection means for deflecting the plurality of light fluxes emitted from the light source means; and

15 scanning optical means for guiding the plurality of the light fluxes deflected by the deflection means onto a surface to be scanned and scanning the surface, the scanning optical means including a fine structural grating on at least one
20 optical surface thereof,

 wherein the fine structural grating has a triangular grating in which a plurality of triangular grating parts are arranged in one dimensional direction, and

25 wherein when a grating height of a triangular structure of the triangular grating is given by h , a grating pitch thereof is given by P , and a shortest

wavelength of wavelengths of the plurality of light fluxes emitted from the light source means is given by λ_{\min} , conditions of

$$0.23\lambda_{\min} \leq h \text{ and}$$

5 $0.52 < h/P$

are satisfied.

5. A scanning optical system according to claim 4, wherein a light flux incident into the fine structural grating is substantially P polarized light.

6. A scanning optical system according to claim 4, wherein when a light flux incident into the fine structural grating is substantially S polarized light, conditions of

$$0.35\lambda_{\min} \leq h \text{ and}$$

$$0.80 < h/P$$

are satisfied.

7. A scanning optical system according to claim 4, wherein:

the light source means includes a plurality of light source sections for emitting different polarized light fluxes;

the scanning optical system further comprises a beam combining means for combining the different polarized light fluxes on optical paths, the beam

combining means being located between the light
source means and the deflection means; and
conditions of

$$0.35\lambda_{\min} \leq h \text{ and}$$

5 $0.80 < h/P$

are satisfied.

8. An image forming apparatus comprising:

a scanning optical system according to claim 1;

10 a photosensitive member located on a surface to
be scanned;

a developing unit for developing as a toner
image an electrostatic latent image formed on the
photosensitive member by the light flux for scanning
15 from the scanning optical system;

a transferring unit for transferring the
developed toner image to a material to be
transferred; and

20 a fixing unit for fixing the transferred toner
image to the material to be transferred.

9. An image forming apparatus comprising:

a scanning optical system according to claim 1;

and

25 a print controller for converting code data
inputted from an external device into an image signal
and inputting the image signal to the scanning

optical system.

10. A color image forming apparatus comprising:
a plurality of scanning optical systems
5 according to claim 1; and
a plurality of image bearing members, each of
which is located on a surface to be scanned, of a
corresponding scanning optical system, the plurality
of image bearing members forming images having colors
10 different from one another.

11. A color image forming apparatus according
to claim 10, further comprising a print controller
for converting a color signal inputted from an
15 external device into image data corresponding to
different colors and for inputting the image data to
the respective scanning optical systems.